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CERTAIN SHELL HEAPS OF THE ST. JOHN'S RIVER, FLORIDA, HITHERTO UNEXPLORED.

By Clarence Bloomfield Moore.

(*Continued from July Number*, 1893.)

(*Fourth Paper.*)

MULBERRY MOUND (ORANGE COUNTY).

By referring to the map accompanying the first article of this series,[1] the reader will see that Mulberry Mound lies on the west bank of the St. John's, just north of the river's exit from Lake Poinsett. Rising abruptly from the water's edge the mound offers the only solid footing for miles around, and upon it the otter hunter on his way up and down the stream finds a welcome refuge. This island mound has been under cultivation in former years, but when visited (February, 1892, and February, 1893) was covered densely with vines, shrubbery and sugar-cane. In all, eight days were spent in investigation with a party of eight workers. The mound extends from S. S. E. to N. N. W. The length of base is 285 feet; its maximum breadth 120 feet; its maximum height from water level at a low stage of the river is 15 feet, 6 inches. Shell continues to an undetermined depth. The mound is unstratified, as a whole, and is composed mainly of uniones with a large admixture of sandy loam, containing occasional ampullariæ and paludinæ.

At no part of the mound investigated by the writer was there any evidence of the presence of loose masses of shell comparatively unbroken. Abandoned fire places were found at every depth. Upon the surface is a stratum of loam and sand from 1½ feet to 2½ feet in thickness. This layer is probably a formation subsequent to the abandonment of the mound by the eaters of shell-fish, and all articles found therein cannot with certainty be attributed to the period of the formation of the shell heap.

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[1] American Naturalist, Nov., 1892.

To the north of the shell heap is a small burial mound which, through its immediate association with the shell heap, is of the greatest interest. To it a number of additional days were devoted.

Of all the shell heaps of the St. John's, Mulberry Mound most richly rewards archeological research. So distant is the nearest solid ground and so contracted were the quarters of those who raised the shell heap that every article cast away or lost during certainly a very long period is contained within an area a mere fraction in comparison to that of many shell heaps of the lower river.

On the summit of Mulberry Mound, not far separated, three excavations were made: 10½ x 7 x 12 feet deep; 12 x 7½ x 10 feet deep; 16 feet, 8 inches by 14 feet, 5 inches by 16 feet deep. All these excavations were subsequently increased in size by the use of the pick upon the sides.

Pottery.

While the sherds found throughout the excavations were of good quality and ornamented fragments of pottery were found even below water level, yet in numbers and in variety of design they by no means compared with the fragments of ruder material so plentifully met with in other shell heaps of the river and notably at Tick Island and at Orange Mound. No sherds were encountered of that coarse and porous material showing original intermixture of vegetable fibre save two or three specimens at the very base of the mound. At a distance of 8½ feet from the surface was a fragment of pottery, colored a bright red, and three other sherds similarly decorated were encountered in various stages of the excavations. While pottery of this character is of frequent occurrence in the sand mounds its discovery is not on record hitherto in the shell heaps of the river. Pottery with stamped decoration, so common on the surface along the St. John's, was fairly abundant in the upper portion of the mound, while specimens were met with at unusual depths, one sherd thus decorated being found at a distance of 10 feet from the surface. As a rule, the ceramic ornamentation consisted of incised lines, several of novel pattern. One specimen showed interior decoration, the outer surface being plain. Another had been scratched upon the surface subsequent to the completion of the pottery (Fig. 1).

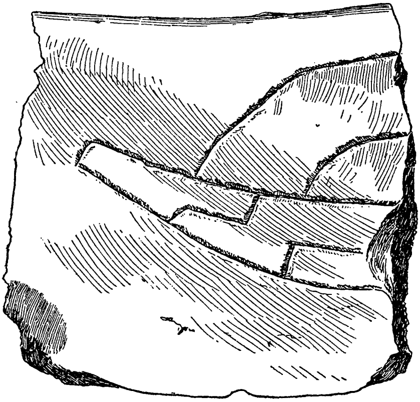

Fig. 1. (Full size.)

Three feet from the surface, in excavation 3, a vessel was uncovered, uninjured, with the exception of a small chipping from a portion of the rim. The material was of inferior quality. Its decoration varied, consisting of lines and dots in various combinations. The body of the bowl was plain. Its diameter at the mouth which was irregular but nearly circular, was from 8¼ inches to 7¾ inches. Its height was 4 inches. Its average thickness of material was .3 of an inch. In form it resembled a bowl, a common shape in the sand mounds.

Various partially broken vessels were found unornamented and presenting no peculiarity. One contained a mass of unbaked clay.

Nine and a half feet from the surface was found what at the time was considered a fragment of a large bead of pottery (Fig. 2), and not until two similar and more complete objects were met with in the adjoining burial mound (Figs. 3 and 4) was the conclusion arrived at that it was a portion of a tobacco pipe.

It will be remembered that the absence of pipes from the shell heaps was emphasized by Professor Wyman, and the writer, in upward of eighty shell heaps carefully explored, has heretofore found nothing indicating the use of tobacco by the eaters of shell fish, though pipes have been taken by him from the burial mounds. A careful comparison, however, of the figures given herewith should convince the most skeptical that all three are fragmentary parts of vessels used in the smoking of tobacco, and such is the opinion of Professor Haynes who has made a careful examination of the specimens.

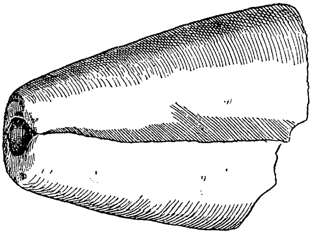
Fig. 2. (Full size.)

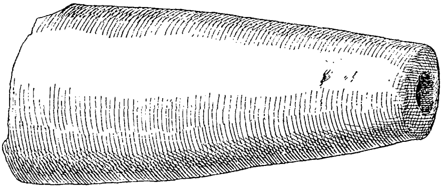
Fig. 3. (Full size.)

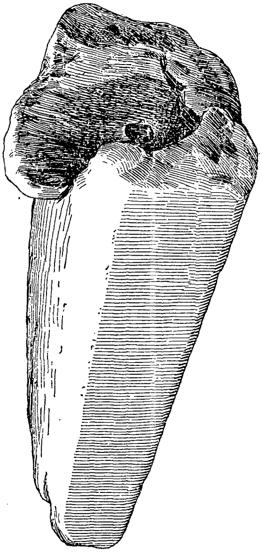
Fig. 4. (Full size.)

During the excavation a mass of baked clay was found bearing the imprint of human fingers.

At a depth of 2½ feet was found a mass of clay about six inches in height, unbroken, resembling half the cast of a pot. It is quite evident that whatever its use may have been, clay could readily have been moulded around it when placed with one of similar proportions.[2]

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[2] It is possible that the masses of clay referred to by Squier and Davis (Ancient Monuments of the Mississippi Valley, page 149) were of similar character.

An Attempt at Delineation.

At a depth of 10 feet from the surface two pieces of pottery in immediate association were thrown out in the same shovelful of debris. An investigation showed the fragments, which were covered with the soot so frequently found upon the sherds of the shell heaps, to belong to the same vessel, though the fracture was contemporary with their abandonment in the mound. Upon them was rudely cut a representation of the human figure (Fig. 5).

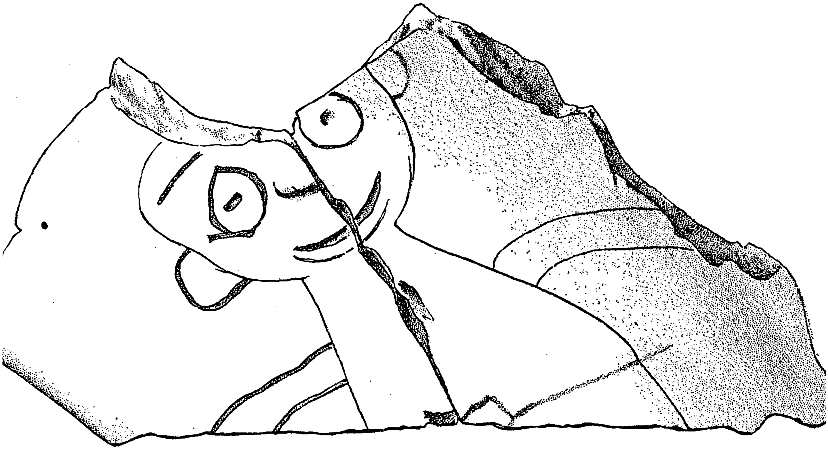

Fig. 5. (Full size.)

The discovery of this attempt at delineation at so great a depth in a shell heap of the river is of peculiar interest, being entirely unique in the extended search of the writer and unreported by others.[3]

Bone.

Upward of ninety implements of bone, many of which were somewhat fragmentary, were met with in the three excavations. As the depth of the excavations increased implements were found in an inverse ratio. Awls and piercing implements were numerous. One foot and five feet from the surface were two-pointed implements resembling daggers, respectively 6¼ inches and 7¼ inches in length (Figs. 6 and 7). Piercing implements of bone of this size are not mentioned by Wyman, nor have they been met with by the writer in any other shell heap of the St. John's, though in the burial mound at Tick Island was found a carefully fashioned pointed instrument of human bone 9¼ inches in length, circled at the blunt end by an incised line. On one side were three perforations extending longitudinally below. These long stilletto-shaped implements of bone are not uncommon in other localities. Professor Haynes is of the opinion that they were used in the weaving of baskets.

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[3] This aboriginal attempt at delineation may be seen at the Wagner Free Institute, Philadelphia.

At a depth of four feet was an implement, in shape resembling a shuttle (Fig. 8), hitherto unreported in connection with shell heaps in the river.

Two slender pins with lined ornamentation around the heads (Fig. 9), 7 inches and 8.2 inches in length, both discovered at a depth of three feet from the surface, though in separate excavations, were found intact, while throughout were numbers of small piercing implements two inches in length and over fashioned from the long bones of small carnivores with the articular portion remaining (Fig. 10). The core of a stag horn was lined with eight parallel circles.

A curious implement, 2.3 inches in length, was exhumed, made from a solid bone, unidentified, having a maximum diameter of 1 inch, polished at the base and drilled to a depth of .9 inch, the cavity diminishing slightly in size from the margin of the orifice inward. The opposite end was beveled on one-half to a central ridge, the other portion being cut down as if to connect with the cavity below. Two longitudinal parallel lines were on either side, while a longitudinal ridge spread out at the upper portion, forming a triangle of which the margin of the top formed the base. Unfortunately a series of figures would be required to represent this curious object.

A portion of the head of a piercing implement, 1⅜ inches in length was beautifully decorated with lines. Exposure to

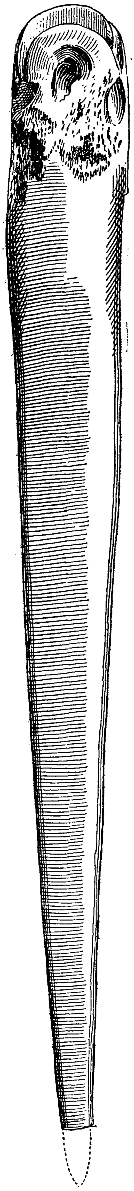


Fig. 6.

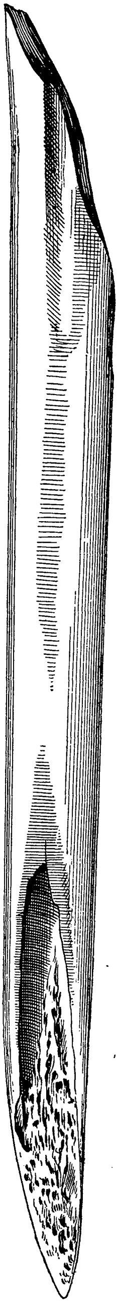


Fig. 7.

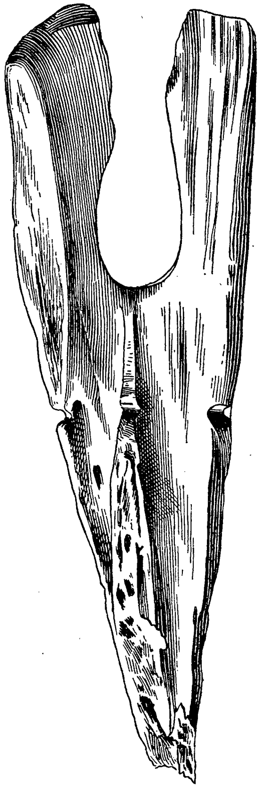


Fig. 8.

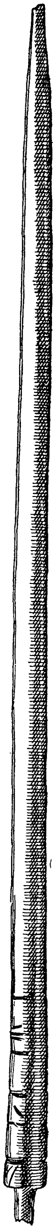


Fig. 9.

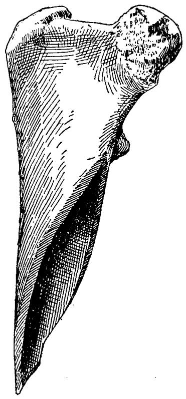


Fig. 10.

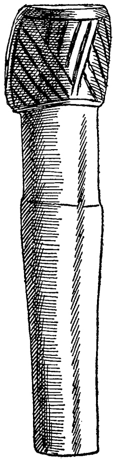


Fig. 11.

Implements of Bone. (All full size.)

fire had colored it black and given to the surface a brilliant polish (Fig. 11).

Stone.

Just below the surface loam was a portion of a celt of slate, 2½ inches in length, polished and with ground cutting edge. Its depth does not identify it positively with the shell heap. 1½ feet from the surface was found a "sinker," or pendant ornament,[4] 2⅝ inches in length, rimmed at either end for suspension (Fig. 12). This interesting relic cannot positively be attributed to the period of formation of the mound. It is probable that later Indians cultivated the mound which, moreover, within recent years has been ploughed to facilitate the planting of sugar-cane.

Two feet from the surface a round sandstone hone was met with.

At a depth of 4½ feet was brought to light a celt of polished shale of rude workmanship, with the portion farthest from the cutting edge roughened, probably for insertion into a socket (Fig. 13). This find is extremely interesting, being the tfirs on record of an implement of polished stone found in a shell heap of the St. John's at a depth to justify the belief as to an origin contemporary with the heap. Among other articles of interest brought to light were a sandstone hone, grooved through the sharpening of pointed implements, and a flat piece of coquina.

At a depth of 14 feet, 8 inches from the surface was found a lance head of fine chert, 3.6 inches in length, thin and of graceful pattern, while 8 inches above were two lance heads of chert, one of beautiful design, barbed and having the base of the tang concave, fully as graceful in design and in finish as any stone point met with on the surface. Its length was 3.8 inches.

Its companion was of coarse yellow chert, with a length of 4.14 inches, and had a natural defect through crystallization of the material. It was of ruder workmanship. The great rarity of implements of stone in the shell heaps was commented

[4] Positive identification as to material has been found impossible without mutilation of specimen.

upon by Wyman, and the writer during his investigations has had no grounds to differ from Professor Wyman's opinion. The discovery of lance points at such a depth and of such graceful pattern is entirely without precedent. Specimens of the rude and thick arrow points ordinarily found in the shell heaps will be figured in a later paper.

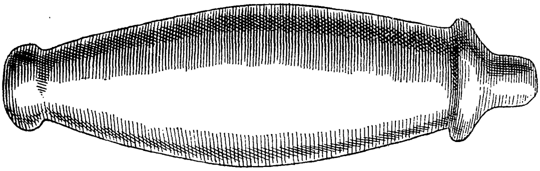


Fig. 12. (Full size.)

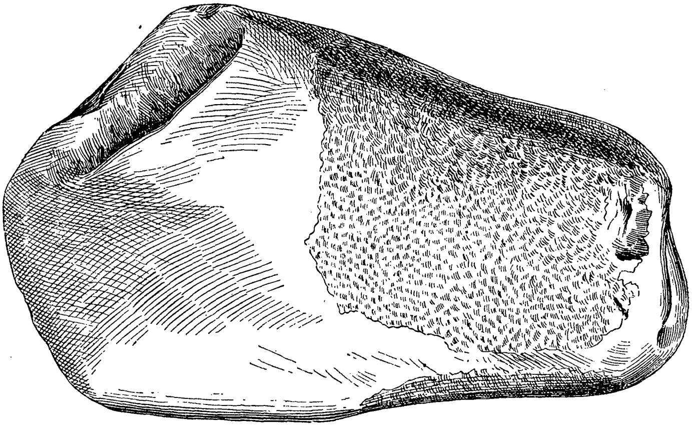


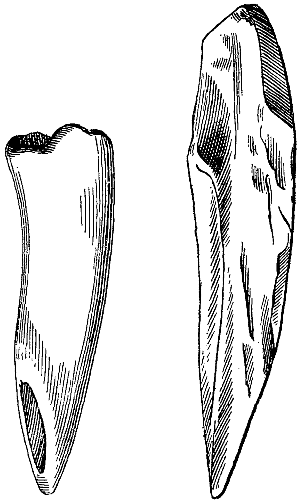
Fig. 13. (Full size.)

Throughout the excavations were found a number of pieces of red hematite, the largest being $3\frac{1}{2}$ x $2\frac{3}{8}$ x 2 inches. This mineral was largely used as coloring matter in several of the burial mounds, notably at Mt. Royal where the whole upper stratum is dyed with it.

Shell.

As in the case of implements of bone, so of shell it may be said that Mulberry Mound among all the shell heaps of the St. John's has furnished the richest results to the archeologist.

At every depth were found gouges and scrapers of shell, many unbroken, and columellæ of fasciolaria, one 10½ inches in length. Two and a quarter feet and five feet below the surface were found two drinking cups, formed from fulgur *perversum,* with portions of the side and the inner whorls removed, a form common enough on the surface and in the burial mounds, but very unusual at any depth in the shell deposits. Curiously enough, similar drinking cups wrought from the conch are in use to-day by the side of springs in some of the sea-board southern states.



Piercing Implements of Bone.
Mulberry Mound (full size).

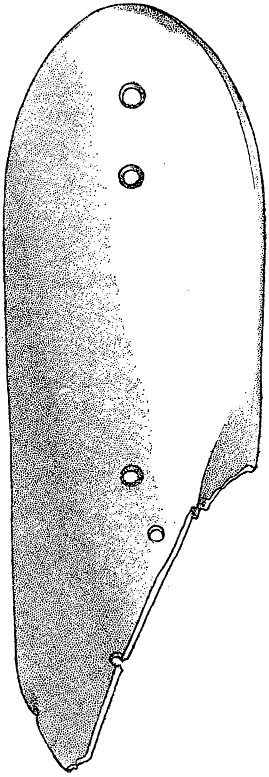


Fig. 14. $\frac{2}{3}$ size.

Ten feet from the surface in perfect condition was a beautiful chisel fashioned from the lip of *strombus.*

Five feet from the surface was found a *cardium,* unbroken, but giving evidence of wear upon the edge, and having a portion of the shell between the ridges removed. A *pecten*, without wear or work upon the edges, is figured in the annual report of the Bureau of Ethnology, 1880–1881, Plate XXI, Fig. 3. This particular shell is described as having served among the Indians as a receptacle for paint, and as coming from Santa Barbara, California. It is possible that the "cockle shell" from Mulberry Mound may have been used for the lining of pottery. At all events, the two central ridges could be put to such a purpose.

At a depth of 13 feet, 8 inches was found a portion of a gorget of shell, the part recovered being 6.04 inches in length, 2 inches in breadth, with an average thickness of .12 inch (Fig. 14). It bore three perforations for suspension or for attachment, and two smaller ones along the line of fracture, evidently corresponding with similar ones on the missing portion, arranged to allow of repair by binding, a method common at that period. The discovery of a gorget or any object of personal ornamentation is so unusual in a shell heap of the St. John's that particular stress deserves to be laid upon it. In fact, with the exception of one longitudinally perforated phalanx of a deer, from Salt Run (Marion Co.), no articles of personal adornment have been found by the writer in any shell heap of the St. John's beyond the limits of Mulberry Mound.[4]

At various distances from surface, one even so deep as 11 feet, were found six fulgurs, five of the species *carica* and one *perversum*. All were ground at the beak, and all with the exception of one carica, were perforated. Three of the species *carica* had single perforations below the angle and involving it, and one on the body whorl between the angle and the suture within an inch of the aperture.

The fulgur *perversum* had a small round perforation above the angle and two, one $\frac{1}{4}$ inch, the other $\frac{7}{8}$ inch, below. These perforations were considerably larger than the one above. The finding of the perforated fulgurs at so great a depth in a shell heap will, with other matters relating to these perforated shells, be referred to in Note A.

Human Remains.

Eleven feet from the surface, in immediate association with fragmentary bones of the lower animals, lay a portion of the shaft of a human femur 3¾ inches in length, with old breaks at either end; a portion of the shaft of a tibia, broken in excavation; two right heel bones, somewhat crushed; two bones of the toe; a fragment of a radius with old break, and a portion of rib. Five feet east of these remains lay a fragmentary portion of human femur, showing no recent fracture, while at the same level, but four feet distant, in the southeast corner of excavation 3 lay a fragment of femur; an ulna in two portions, old break; a small fragment of lower jaw and a piece of femur with old longitudinal split. At about the same level in the northwestern portion of the excavation, apparently entirely isolated, was the upper half of a human ulna. In view of the scattered and broken condition of these bones and their association with the bones of animals used for food together with the fact that an almost contiguous burial mound offered a means of sepulture, it seems unlikely that these human remains are other than refuse left over from a cannibalistic repast. Never elsewhere on the St. John's has the writer come upon human remains in this condition at a depth from the surface greater than 3 feet, and in his introductory paper, written previous to a second visit to Mulberry Mound, he stated that in view of the numerous cases indicating cannibalism discovered by him along the greater portion of the river where shell heaps exist, at no great depth from the surface, he was inclined to the belief that the custom must have come in at a somewhat late period of the formation of the shell heaps. Subsequent research may prove this supposition unfounded, but for reasons to be mentioned later the presence of human remains in this condition in Mulberry Mound does not modify his previously expressed opinion.

Remains of Lower Animals.

As is the case in the majority of shell heaps, the deer and turtle in Mulberry Mound were found, next to shell fish, to have been the most staple articles of diet. In addition to a number of small fragments unidentified, were found bones of the alligator, of the raccoon, of the turtle, of the black bear, of the red lynx (a jaw), of the catfish and of the gar. Also a curious bone identified by Professor Cope as supporting the dorsal fin in a member of the sheep's head family. The jaw of the red lynx, an animal hitherto unreported in the shell heaps of the St. John's, was submitted to Professor Cope for identification.

NOTE A.

Perforated Fulgurs.

The fulgur, sometimes termed the busycon, popularly known as the conch, was a shell extensively in use among the aborigines. If specimens of the two species of fulgur most commonly found on the St. John's River are held facing the investigator the shell having the aperture to his right is termed *carica*, to his left, *perversum*. Fulgurs with artificially ground beaks and with circular or oval perforations evenly made are comparatively numerous upon the surface of the territory bordering the St. John's River. They are seldom at a greater depth in the shell heaps than can be reached by the plow. Their superficial position was noticed and commented upon by Wyman (Fresh Water Shell Mounds of the St. John's River, Florida, page 58 and Plate VIII, Fig. 2). They are, however, occasionally found in the burial mounds of sand at depths excluding the idea of an intrusive deposit.[5] With the exception of Mulberry Mound, no shell heap in the writer's

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[4] Wyman figures two perforated objects from the shell heaps, and the writer has a considerable number of the phalanges of the deer perforated longitudinally, ploughed up and presented to him by Mr. Charles Dillard of Volusia. He is also indebted to Mr. McAllister of Bluffton, Volusia Co., for the fossil tooth of a shark, perforated laterally, found superficially in the shell deposit at that place.

[5] This is particularly true of the great mound at Mt. Royal, Putnam Co., where in one trench among a number made, no less than 1307 fulgurs were found by the writer. A very small percentage, however, were evenly perforated in the manner of the shells under discussion. The great majority were of the species perversum. Some were unbroken, but the greater number were apparently intentionally mutilated in the manner of mortuary pottery by having a piece roughly knocked out.

investigations has yielded perforated conchs at a considerable depth, and as the territory bordering the St. John's has been carefully searched by the writer, having in mind the investigation of these perforated fulgurs, he is strongly inclined to the belief that the employment of these implements came in at a period subsequent to or approaching the abandonment of the great majority of the shell heaps of the river.

The use of these perforated fulgurs is not determined. Wyman confessed himself in doubt. In "Art in Shell," Bureau of Ethnology, Annual Report, 1880–1881, Professor Holmes figures a perforated fulgur (Plate XXVII) and cites Rau, "Archæological Collection of the National Museum," page 67: "It further appears that the Florida Indians applied shells of the *busycon perversum* as clubs or *casse-tetes* by adapting them to be used with a handle, which was made to pass transversely through the shell. This was effected by a hole pierced in the outer wall of the last whorl in such a manner as to be somewhat to the left of the columella, while a notch in the outer lip, corresponding to the hole, confined the handle or stick between the outer edge of the lip and inner edge of the columella. * * * * A hole was also made in the posterior surface of the spire behind the carina in the last whorl, evidently for receiving a ligature by means of which the shell was more firmly lashed to the handle."

Of scores of perforated fulgurs from the river, examined by the writer, he can recall but two wrought from the fulgur *perversum.* The fulgur *carica* is a more massive shell and better fitted for the rough work than the more slender *perversum* from which shell the drinking cups of the river shell heaps and mounds are fashioned. It is true that a heavy variety of *perversum* is met with on the coast, and that the fulgur *carica* is rarely, if ever, found on the west coast or on the east coast south of Jupiter inlet.[6]

In the coast shell heaps alone is the perforated fulgur *perversum* found to any extent, and this point should be remembered when perforated fulgurs of Florida are under discussion.

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[6] The Academy of Natural Sciences, possesses no fulgurs of the species carica from the west coast. The Smithsonian has one, stated to be from Cedar Keys; its record is not well established.

In the river shell heaps a very small percentage of perforated shells have a notch in the outer lip, while absolutely none has a perforation in the spire, if we consider the spire to be that portion of the shell surrounding the apex, bounded by the suture. Moreover, a considerable majority of the perforated shells have but one hole, that being in the body whorl between the angle and the suture, from one to two inches to the right of the aperture. A certain percentage of fulgurs have the perforation below the shoulder, or angle, but frequently in such a position that if hafted, the ground beak of the shell would not be at right angles with the handle, and occasionally the perforation is so placed that a handle entering the aperture could not reach it. In other cases, perforations are disproportionately small and oval in shape, unfitted to receive a handle suitable for the rough usage of a war club. In the writer's collection are two good sized fulgurs with perforations .54 inch by .76 inch, and .86 inch by .56 inch. Many perforated fulgurs with ground beaks are of a size to set aside the hypothesis of their employment for any purpose where weight is an important factor. Of these the writer has one weighing but eight ounces, while another is but 2¾ inches in length. Occasionally fulgurs are seen with perforations in the body whorl above and below the shoulder, and it is probable that these are the ones referred to by Rau with a misapprehension as to the location of the spire. Again, other fulgurs are found with a single perforation between the angle and the suture, having two below the shoulder and equidistant from it. A fulgur *perversum* of this character, was taken by the writer from the historic mound at Mt. Royal, Putnam County.

Some fulgurs with ground beaks are imperforate, while others with perforations show grinding or wear where not alone the beak is involved but a portion of the lip. Other shells give evidence of considerable wear on the margin of the perforation toward the upper and lower portion of the shell, showing that the implement was not securely hafted and that it was subjected to continuous use. Others are polished on the spire and body whorl above the periphery as though held in the hand.

From all this it is evident that while certain perforated fulgurs may have served for war clubs the great majority did not. Mr. Douglass, who is so familiar with the east coast of Florida, believes some of them to have served as hoes, and in this he is doubtless right. Probably, as is the case with most aboriginal implements, their use was various.

Conclusions.

At no point in the excavations at Mulberry Mound were whole shells found in any numbers, the heap having grown apparently from the beginning by the slow accretion of refuse from the meals of the few families living upon it and been solidly packed beneath their feet. It is apparent that such should be the case, since solid ground is too far distant to admit of the hypothesis that the mound was made through contributions of others not living upon its immediate surface. That a considerable time was required to pile so great a mass of shell to such a height through the agency of comparatively few there can be no reason to doubt. And yet the writer is convinced that of all the shell heaps investigated by him and by Professor Wyman the shell heap at Mulberry Mound is the most recent, and that it was still in process of formation when many others were abandoned, at least for use as refuse heaps. This belief is based upon the marvelous variety of the implements of bone, so infrequent in the other mounds, and patterns heretofore unreported from other localities on the river. The presence of delicately wrought lance heads near the base; of colored and of stamped pottery at considerable depths; of fulgurs at a distance from the surface; of a carefully made gorget of shell; the discovery of an implement of polished stone, a fact previously unheard of in the river shell heaps, and fragmentary human bones a number of feet from the surface, found only superficially by the writer in numerous other shell heaps, when taken together, argue for Mulberry Mound an origin posterior to other shell heaps of the St. John's hitherto explored. It will be noted, however, that nothing found in this shell heap indicated a knowledge of Europeans or in any way pointed to its formation in post-Columbian times.